

SKIN TONE MOBILE DEVICE AND SERVICE

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. provisional application No. 60/763,296, filed Jan. 30, 2006, which is incorporated by reference as if fully set forth.

FIELD OF INVENTION

[0002] The present invention generally relates to portable electronic devices. More particularly, the present invention relates to a device, system, and method for providing customized skins for portable electronic devices.

BACKGROUND

[0003] As the cost and complexity of portable devices has decreased, these devices have become ubiquitous throughout society. Such portable electronic devices include mobile phones, portable music players, personal digital assistants (PDAs), laptop computers, and the like. People have accepted these devices as part of everyday life. As such, people are demanding that these devices be customizable. For example, different wallpapers may be selected to provide a background for a device's display. Alternatively, a portable electronic device may have its external case (i.e. its skin) customized by application of different plastic casings. Adhesive sticker skins may also be printed then affixed to the portable electronic device. These types of customization do not affect the functionality of the device; they merely provide a rudimentary personalization of the device to the tastes of the user.

[0004] In a slightly more advanced manner, the functionality of an electronic device, such as a mobile phone, may be changed. For example, customization of ring tones may be selectively based on a variety of conditions including the identity of the incoming caller, the time of day, the location of the mobile phone, and the like. A mobile phone user may access a variety of ring tones that are typically offered for sale by the mobile phone's service provider. This also provides an additional source of income for the service provider.

[0005] Traditional displays, such as liquid crystal displays (LCDs), require a constant supply of power to maintain an image. Therefore, there has always been a tradeoff between maximizing the size of the display in order to maximize the functionality of the device and enhance the user experience, and minimizing the display in order to decrease the power requirements and battery drain.

[0006] In contrast, there is a new generation of displays that do not require a tradeoff between functionality and power management. Adaptable display devices only require power to change the image on the display. Once an image is written to an adaptable display, the power source may be removed without any effect on the written image. Electrochromic displays, bistable LCDs, electrophoretic displays, electrowetting displays, nemoptic displays, cholesteric LCDs, dielectrophoresis displays, and anisotropically rotating ball displays are a few examples of adaptable display technologies.

[0007] In order to prolong the battery life of a portable electronic device and maximize its functionality, it is desir-

able to incorporate adaptable displays in such a device. This is particularly useful in applications where it is not a requirement that the image be frequently updated.

SUMMARY

[0008] The present invention includes a portable electronic device having an adaptable skin. The adaptable skin covers a substantial portion of the portable electronic device and is configured to display a customizable image. The image to be displayed may be input from a user of the portable electronic device, or may be transmitted to the portable electronic device through a wireless communication network. In a preferred embodiment, the adaptable skin is touch sensitive, and the skin image to be displayed includes indicia for selection. The adaptable display may be any adaptable display technology, including electrophoretic displays, electrowetting displays, dielectrophoresis displays, bistable LCDs, and preferably electrochromic displays. A wireless communication network and methods for providing skin images to a portable electronic device are also disclosed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] A more detailed understanding of the invention may be had from the following description, given by way of example and to be understood in conjunction with the accompanying drawings, wherein:

[0010] FIG. 1 is a portable electronic device having an adaptable skin in accordance with the present invention;

[0011] FIG. 2 is a schematic diagram of a direct drive electrochromic adaptable skin in accordance with the present invention;

[0012] FIG. 3 is a schematic diagram of an active matrix electrochromic adaptable skin in accordance with the present invention;

[0013] FIG. 4 is the portable electronic device of FIG. 1 displaying a loaded skin image file;

[0014] FIG. 5 is a block diagram of the portable electronic device of FIGS. 1 and 4;

[0015] FIG. 6 is a block diagram of a portable electronic device having an adaptable skin and touch screen functionality;

[0016] FIG. 7 is a block diagram of a portable electronic device having an adaptable skin and touch screen functionality, wherein the adaptable skin replaces a traditional display;

[0017] FIG. 8 is the portable electronic device of FIG. 7;

[0018] FIG. 9 is a wireless communication network capable of supporting skin image files on portable electronic devices;

[0019] FIG. 10 is a method for a user of portable electronic device to request skin image files; and

[0020] FIG. 11 is a method for providing skin image files to a portable electronic device based on the device's location.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] As used herein, the term 'adaptable' when referring to either a display or a skin indicates that power is only